NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Access Road

(Feet)

Code 560

DEFINITION

A travelway constructed as part of a conservation plan.

PURPOSES

To provide a fixed route for travel for moving livestock, produce, equipment, and supplies; and to provide access for proper operation, maintenance, and management of conservation enterprises while controlling runoff to prevent erosion and maintain or improve water quality.

CONDITIONS WHERE PRACTICE APPLIES

Where access is needed from a private or public road or highway to a conservation enterprise or measure, or where travelways are needed in a planned land use area.

CRITERIA

Access roads shall be designed to serve the enterprise or planned use with the expected vehicular or equipment traffic. The type of vehicle or equipment, speed loads, climatic, and other conditions under which vehicles and equipment are expected to operate need to be considered.

Access roads range from seldom used trails to all-weather roads heavily used by the public and built to very high standards. Some trails that facilitate control of forest fires are used for logging, serve as access to remote areas for recreation, or are used for maintenance of facilities.

Sound engineering practices shall be followed to insure that the road meets the requirements of its intended use and that maintenance requirements are in line with operating budgets.

Location. Roads shall be located to serve the purpose intended, to facilitate the control and disposal of water, to control or reduce erosion, to make the best use of topographic features, and to include scenic vistas where possible. The roads should generally follow natural contours and slopes to minimize disturbance of drainage patterns. Roads should be located where they can be maintaned and so water management problems are not created. To reduce pollution, roads should not be located too near water courses. Whenever possible, a buffer strip of undisturbed land shall be maintained between disturbed areas such as logging roads and water courses. (See Table 1.)

Alignment. The gradient and vertical and horizontal alignment shall be adapted to the intensity of use, mode of travel, and the level of development.

Grades normally should not exceed 10 percent except for short lengths, but maximim grades of 20 percent or more may be used if necessary for special uses.

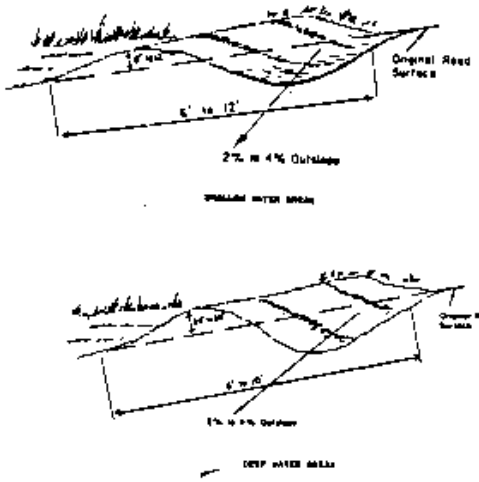
Width. The minimum width of the roadbed is 14 ft for one-way traffic and 20 ft for two-way traffic. Single-lane logging or special-purpose roads have a minimum width of 10 ft, with greater widths at curves and turnouts. The two-way traffic width shall be increased approcimately 4 ft for trailer traffic.

The minimum tread width is 10 ft for one-way traffic and 15 ft for two-way traffic. The tread width for two-way traffic shall be increased approximately 4 ft for trailer traffic.
The minimum shoulder width is 2 ft on each side of the tread width.
Where turnouts are used, road widths shall be increased to a minimum of 20 ft for a distance of 30 ft.

Table 1. Widths for Buffer Strips between Logging Roads and Streams.

Slope of Land Between Road and Stream (Percent)	Width of Buffer Strip (Feet)
0	25
10	45
20	65
30	85
40	105
50	125
60	145
70	165

Side Slopes. All cuts and fills shall have side slopes designed to be stable for the particular site conditions.
Areas with geological conditions and soils subject to slides shall be avoided or treated to prevent slides.
Drainage. The type of drainage structure used will depend on the type of enterprise and runoff conditions. Culverts, bridges, or grade dips for water management shall be provided at all natural drainageways. The capacity and design shall be consistent with sound engineering principles and shall be adequate for the class of vehicle, type of road, development, or use.
Roadside ditches shall be adequate to provide surface drainage for the roadway and deep enough, as needed, to serve as outlets for subsurface drainage. Channels shall be designed to be on stable grades or protected with structures or linings for stability.
Water breaks may be used to control surface runoffs on low-intensity use forest or similar roads. (See Table 2.)
The structure may be shallow or deep depending upon the need. The deep breaks are usually used on roads or skid trails to be closed to vehicle traffic. Water breaks should be installed at about a 30-degree angle down slope.



Surfacing. Access roads shall be given a wearing course or surface treatment if required by traffic needs, climate, erosion control, or dust control. The type of treatment depends on local conditions, available materials, and the exisiting road base. If these factors or the volume of traffic is not a problem, no special treament of the surface is required.
Unsurfaced roads may require controlled access to prevent damage or hazardous conditions during adverse climatic condtions.
Toxic and acid-forming materials shall not be used on roads. This should not be construed to prohibit use of chemicals for dust control and snow and ice removal.
Traffic Safety. Passing lanes, turnouts, guardrails, signs, and other facilities as needed for safe traffic flow shall be provided. Traffic safety shall be a prime factor in selecting the angle and grade of the intersection with public highways. Preferably, the angles shall not be less than 85 degress. The public highway shall be entered either at the top of a hill or far enough from the top of a curve to provide visibility and a safe sight distance. The clear sight distance to each side shall not be less than 300 feet, if site conditions permit.

Table 2 - Distances between Water Breaks on Logging Roads and Skid Roads.

Grade of Road (Percent)	Distance Between Water Breaks (Feet)
2	250
5	135
10	80
15	60
20	45
25	40
30	35
40	30

Erosion Control. If soil and climatic conditions are favorable, roadbanks and disturbed areas shall be vegetated as soon as possible and skid trails, landings, logging, and similar roads shall be vegetated after harvesting or seasonal use is completed. Seedbed preparation, seeding, fertilizing and mulching shall be according to the Construction Specifications. If the use of vegetation is precluded and protection against erosion is needed, protection shall be provided by nonvegetative materials, such as gravel or other mulches.

Roadside channels, cross drains, and drainage structure inlets and outlets shall be designed to be stable without protection. If protection is needed, riprap or other similar materials shall be used.

Watercourses and water quality shall be protected during and after construction by erosion control facilities and maintenance. Buffer strips, sediment and water control basins, and other conservation practices shall be used and maintained as needed.

Turnarounds and Parking. Dead end roads shall be provided with a turnaround. In some areas, turnarounds may also be desirable for stream, lake, recreation, or other access purposes.

Parking space, as needed, shall be provided to keep vehicles off the road or from being parked in undesirable locations.

CONSIDERATIONS

Effects on water quantity and quality shall be considered. This practice normally occupies a small portion of the total area of the farm or watershed; therefore, it may have negligible effect on water quantity.

Water Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation and ground water recharge.

2. Effects of snowcatch and melt on water budget components.

3. Effects on downstream flows or aquifers that would affect other water uses or users.

4. Effects on the volume and timing of downstream flow to prohibit undesirable environmental, social, or economic effects.

The type of construction, maintenance, and location of a road determine its effect on water quality. When the road is located across the slope, runoff from the upslope of the road may be retarded in the roadside ditches. This may cause sediment to be deposited in the ditch along the road side, reducing sediment delivery to the receiving waters. Runoff from the area downslope of the road may not be effected except where the road culverts or low water crossings may concentrate the discharge of the hill runoff from an uphill area. This may result in a higher carrying capacity of the outlet channel resulting in increased bank and channel erosion and direct transport of detached sediment, deicing salts and related pollutants. There may be a concentration of pollutants in roadside ditches, increased infiltration, and an increase in soluble chemicals being percolated into the soil, water and ground water.

Water Quality

1. Short-term and construction related effects of this practice on the quality of on site downstream water courses.

2. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment attached substances that would be carried by runoff.

3. Effects on the visual quality of water resources.

4. Effects on the movement of dissolved substances below the root zone toward the ground water.

5. Effects on wetlands and water related wildlife habitats that would be associated with the practices.

Special Attention shall be given to maintaining and improving visual resourses and habitat for wildlife where applicable. The landowner/ user will be advised if wetlands will be affected and USDA-NRCS wetland policy will apply.

Where general public use is anticipated, roads should be planned and designed to meet applicable federal, state, or local criteria. All work planned shall be in compliance with General Manual Title 450-GM, Part 405, Subpart A, Compliance With Federal, State and Local Laws and Regulations.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing access roads shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose

1. Construction Specifications

General. Construction operations shall be carried out in such a manner and sequence that erosion and air and water pollution are minimized and held within acceptable limits. Construction methods that enhance fish and wildlife will be used where practical. Trees, stumps, and brush removed from the construction area may be piled for wildlife habitat when approved by the landowner/ user. The completed job shall present a workman like appearance and conform to the line, grades, and elevations shown on drawings or as staked in the field.

All operations shall be carried out in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used.

Site Preparation. Special attention shall be given to protecting and maintaining key shade, food and den trees and visual resources. Removal of any trees and brush shall be done in such a manner as to avoid damage to other trees and property.

All trees, stumps, brush, and similar materials are to be removed from the site or disposed of in such a way as to have the least detrimental effect on the enviroment.

Excavation. To the extent needed, all suitable materials removed from the specified excavation shall be used in the construction of the earthfill areas of the access road. All surplus or unsuitable materials shall be disposed of in a manner that will not interfer with the functioning of the road.

Fill Placement. Materials placed in the fill areas of the access road shall be free of detrimental amounts of sod, roots, frozen soil, stones over six inches in diameter and other objectionable material. The distribution and gradation of materials shall be such that there will be no lenses, pockets, streaks, or layers of material differing substantially in texture or gradation from the surrounding material.

Moisture Control. The minimum moisture content of the fill material and foundation shall be such that, when kneaded in the hand, the fill material will form a ball which does not readily separate. The maximum moisture content is reached when conditions are too wet for efficient use of the hauling and compaction equipment.

Topsoiling. Topsoil shall be removed and stockpiled on areas where establishment of vegetation is a problem on exposed subsoils (all subsoil types except loam, silt loam, and sandy loam, except where dense till is present). Topsoil shall be respread to provide a seedbed. Where subsoil is exposed or is used in construction, topsoil will be placed in accordance with the following criteria:

a) A minimum of four inches of topsoil ("A" horizon) will be placed where six or more inches of friable soil material with good moisture holding properites (more than 0.15 inches per inch) lie below surface of the constructed surface.

b) A minimum of eight inches of topsoil ("A" horrizon) will be placed where less than six inches of friable soil materials with good moisture holding properties (more than 0.15

inches per inch) lie below the surface of the constructed surface.
c) Topsoil will be placed in final shaping operations. The underlying soil, if needed, will be chiseled or scarfied to permit proper bonding of topsoil.
Finish and Cleanup. Construction areas will be finished in a relatively smooth conditon ready for seeding. All rocks three inches in diameter or larger and roots shall be removed from the areas.
2. Vegetative Establishment
Vegetation will be established on all disturbed areas such as road cut or fill slopes, berms, spoil and other areas except where the slopes are permantaly covered with water or when land use conditons are such that vegetation is impractical. Disturbed areas are to be seeded and/or protected with erosion protection material as soon as possible.
Gullied and uneven areas should be smoothed before attempting to prepare seedbed.
If needed, apply lime to raise the pH to the level desired for species of vegetation being seeded.
Fertilize according to soil tests or at a minimum rate of 1000 lbs of 12-12-12 fertilizer (or its equivalent) per acre as soon as the measure has been constructed within the seeding periods.
Apply 150 lbs per acre of ammonium nitrate 6 to 8 weeks after seeding on soils low in organic matter and fertility.
Work the fertilizer and lime into the soil to a depth of 2 to 3 inches with a harrow or disk.
Prepare a firm seedbed with a cultipacker or cultipacker-type seeder.
Seed one of the following grass mixtures during the preferred seeding periods of March 1 to May 10 or August 10 to September 30.

Species	Minimum Rates of Pure Live Seed
(1) Tall fescue	35 lbs/acre
(2) *Tall fescue (shaded sites)	25 lbs/acre
Creeping red fescue	10 lbs/acre
(3) * Reed canary grass	18 lbs/acre
(4) Ky. bluegrass (urban areas)	40 lbs/acre
(5) Smooth bromegrass	35 lbs/acre

1/4 lb/acre of Ladino clover may be added to all but (4) of the above seed mixtures.

*Adapted to poorly drained soils.
When construction is completed from May 11 to August 9 or October 1 to October 30, a temporary cover crop should be established using one of the following:

May 11 to August 9:

Species	Minimum Rates
(1) Spring Oats	100 lbs/acre
(2) Annual rye grass	20 lbs/acre
(3) Corn	150 to 300 lbs/acre

October 1 to October 30:

Species	Minimum Rates
(1) Wheat	112 lbs/acre
(2) Rye	120 lbs/acre

Where grain is used for temporary cover, the temporary cover should be removed, incorporated or chemically killed before the grain crop develops seed; then fertilized and seeded with permanent seeding in the normal manner during the permanent seeding period.
On critical sites, mulch with 1-1/2 to 2 tons straw per acre. Anchor the mulch with an asphalt spray, netting or mulch anchoring tool, in accordance with Mulching Specification (484).
In areas of sharp breaks in channel grade or where excessive velocities would cause scour, paper netting, jute netting, rock lining, erosion contol blankets or sod should be used.

OPERATION AND MAINTENANCE

Maintenance. A maintenance program shall be established by the landowner/user to maintain the access road and vegetative cover. Items to consider are:

1. Do not graze distrurbed area during vegetative establishment or when soil conditions are wet.

2. Fertilize to maintain a vigorous vegetative cover. Caution should be used in fertilization to maintain water quality.

3. Control tree and brush growth as needed by hand, mechanical or chemical means.

4. Promptly repair eroded areas on or adjacent to the access road.

5. Reestablish vegetative cover immediately where scour erosion has removed established seeding.

6. Add surface treatment material to road to maintain usuage as needed.

7. Periodically inspect areas for proper drainage, maintenance needs or instability. Take immediate action to perform any needed maintenance.